

# Patent Claims

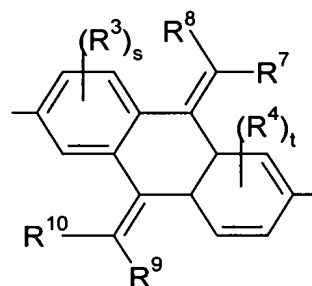
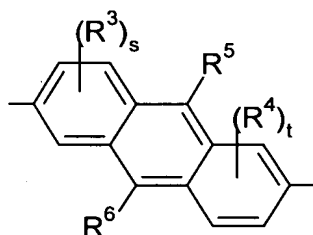
- Compounds comprising one or more identical or different groups of formula I

-(G)<sub>g</sub>-

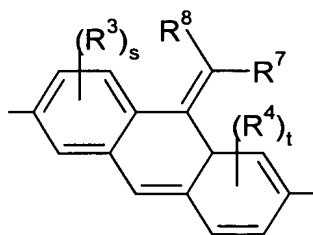
I

wherein

G is, in case of multiple occurrence independently of one another,



or



R<sup>3</sup> to R<sup>10</sup> are independently of each other F, Cl, Br, I, CN, NO<sub>2</sub>, NCS, SF<sub>5</sub> or straight chain or branched alkyl having 1 to 30 C-atoms that is unsubstituted, mono- or poly-substituted by F, Cl, Br, I or CN, and in which one or more non-adjacent CH<sub>2</sub> groups are optionally replaced, in each case independently from one another, by -O-, -S-, -NH-, -NR<sup>0</sup>-, -SiR<sup>0</sup>R<sup>00</sup>-, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -CY<sup>1</sup>=CY<sup>2</sup>- or -C≡C- in such a manner that O and/or S atoms are not linked directly to one another, or P-Sp,

**R<sup>0</sup> and R<sup>00</sup> are independently of each other H or alkyl with 1 to 12 C-atoms.**

5 P is a polymerisable or reactive group,

**Sp** is a spacer group or a single bond,

s and t are independently of each other 0, 1, 2 or 3,

10 g is, in case of multiple occurrence independently of one another, 1, 2 or 3.

2. Compounds according to claim 1, selected of formula I1

15  $-\text{[(G)}_a\text{-(A)}_a\text{]}_z-$  11

wherein G and g have the meanings of formula I,

20                    A                    is, in case of multiple occurrence independently of  
one another,  $-CX^1=CX^2-$ ,  $-C\equiv C-$ , an aromatic or  
alicyclic ring or a group comprising two or more  
fused aromatic or alicyclic rings, wherein these  
rings optionally contain one or more hetero atoms  
25                    selected from N, O and S, and are optionally mono-  
or polysubstituted by  $R^3$  as defined in formula I,

$X^1$  and  $X^2$  are independently of each other H, F, Cl or CN,

30            a            is, in case of multiple occurrence independently of  
one another, 0 or 1,

**z** is an integer  $\geq 1$ ,

35 wherein in case of multiple occurrence the groups  $[(G)_g-(A)_a]$   
can be identical or different.

3. Compounds according to claim 1 or 2, selected of formula I1A



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wherein G, g, A, a and z have the meanings of formula I1,

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$R^1$  and  $R^2$  have independently of each other one of the meanings of  $R^3$  in formula I, or denote  $B(OR')(OR'')$ ,  $SnR^{00}R^{00}R^{00}$  or  $SiR^{00}R^{00}R^{00}$ ,

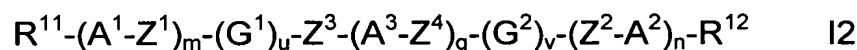
$R^{0-000}$  are independently of each other H, aryl or alkyl with 1 to 12 C-atoms,

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$R'$  and  $R''$  are independently of each other H or alkyl with 1 to 12 C-atoms, or  $OR'$  and  $OR''$  together with the boron atom may also form a cyclic group having 2 to 10 C atoms.

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4. Compounds according to claim 1 or 2, selected of formula I2



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wherein

$G^1$  and  $G^2$  have independently of each other one of the meanings of G in formula I,

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$R^{11}$  and  $R^{12}$  have independently of each other one of the meanings of  $R^3$  in formula I,

$A^1$  to  $A^3$  have independently of each other one of the meanings of A in formula I1,

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$Z^1$  to  $Z^4$  are independently of each other -O-, -S-, -CO-, -COO-, -OCO-, -S-CO-, -CO-S-, -O-COO-, -CO-NR<sup>0</sup>-,

-NR<sup>0</sup>-CO-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -SCH<sub>2</sub>-, -CH<sub>2</sub>S-, -CF<sub>2</sub>O-,  
 -OCF<sub>2</sub>-, -CF<sub>2</sub>S-, -SCF<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CF<sub>2</sub>CH<sub>2</sub>-, -  
 CH<sub>2</sub>CF<sub>2</sub>-, -CF<sub>2</sub>CF<sub>2</sub>-, -CH=N-, -N=CH-, -N=N-, -  
 CH=CR<sup>0</sup>-, -CY<sup>1</sup>=CY<sup>2</sup>-, -C≡C-, -CH=CH-COO-, -OCO-  
 CH=CH- or a single bond,

Y<sup>1</sup> and Y<sup>2</sup> are independently of each other H, F, Cl or CN,

R<sup>0</sup> and R<sup>00</sup> have the meanings given in formula I,

m, n and q are independently of each other 0, 1, 2 or 3,

u and v are independently of each other 0, 1 or 2, with u+v  
 > 0.

5. Compounds according to claim 3 or 4, characterized in that z is  
 an integer from 2 to 5000.

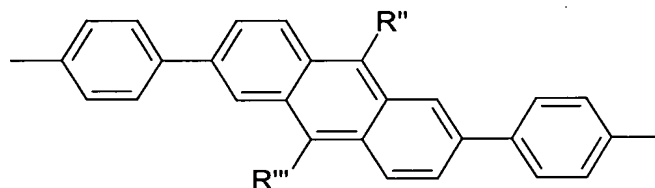
6. Compounds according to claim 3 or 4, characterized in that z is  
 an integer from 1 to 15.

7. Compounds according to at least one of claims 3 to 6,  
 characterized in that one or both of R<sup>1</sup> and R<sup>2</sup> denote P-Sp-.

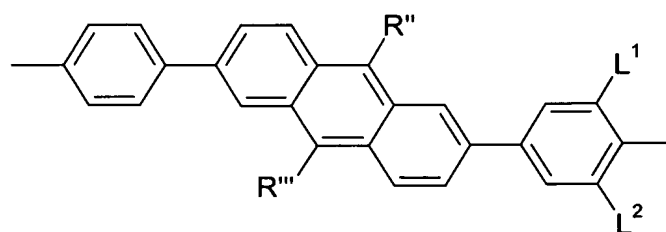
8. Compounds according to at least one of claims 1 to 7,  
 characterized in that R<sup>3</sup> and R<sup>4</sup> are selected from F, Cl, CN,  
 alkyl, oxaalkyl, alkoxy, alkylcarbonyl or alkoxy carbonyl with 1 to  
 15 C-atoms or alkenyl, alkenyloxy or alkynyl with 2 to 15 C-  
 atoms.

9. Compounds according to at least one of claims 1 to 8,  
 characterized in that R<sup>5-10</sup> are selected from F, Cl, CN, C<sub>1</sub>-C<sub>20</sub>-  
 alkyl that is optionally substituted with one or more fluorine  
 atoms, C<sub>1</sub>-C<sub>20</sub>-alkenyl, C<sub>1</sub>-C<sub>20</sub>-alkynyl, C<sub>1</sub>-C<sub>20</sub>-alkoxy, C<sub>1</sub>-C<sub>20</sub>-  
 thioalkyl, C<sub>1</sub>-C<sub>20</sub>-silyl, C<sub>1</sub>-C<sub>20</sub>-ester, C<sub>1</sub>-C<sub>20</sub>-amino, C<sub>1</sub>-C<sub>20</sub>-  
 fluoroalkyl, (CH<sub>2</sub>CH<sub>2</sub>O)<sub>m</sub> with m being an integer from 1 to 6.

10. Compounds according to at least one of claims 2 to 9,  
characterized in that A and A<sup>1-3</sup> are selected from furane-2,5-  
diyl, thiophene-2,5-diyl, thienothiophene-2,5-diyl,  
dithienothiophene-2,6-diyl, pyrrol-2,5-diyl, 1,4-phenylene,  
azulene-2,6-diyl, pyridine-2,5-diyl, pyrimidine-2,5-diyl,  
naphthalene-2,6-diyl, 1,2,3,4-tetrahydro-naphthalene-2,6-diyl,  
indane-2,5-diyl, or 1,4-cyclohexylene wherein one or two non-  
adjacent CH<sub>2</sub> groups are optionally replaced by O and/or S,  
wherein these groups are unsubstituted, mono- or  
polysubstituted by R<sup>3</sup> as defined in claim 1.
11. Compounds according to at least one of claims 1 to 10,  
characterized in that P is a vinyl ether, propenyl ether or  
oxetane group.
12. Compounds according to at least one of claims 1 to 11,  
characterized in that it they comprise one or more repeating  
units selected from the following formulae

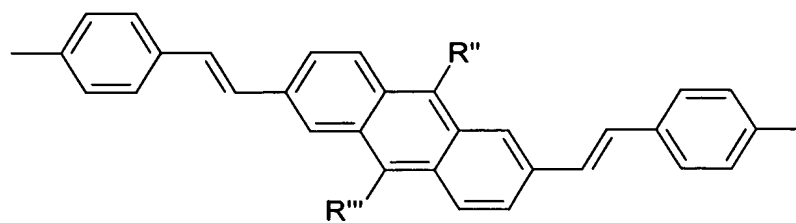


Ia



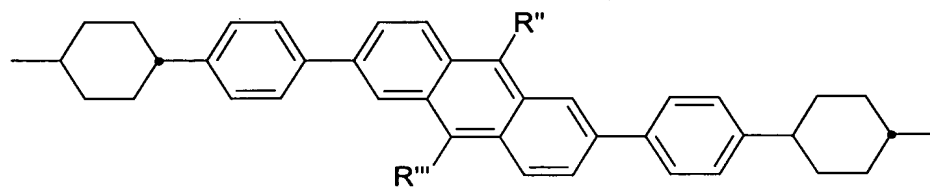
Ib

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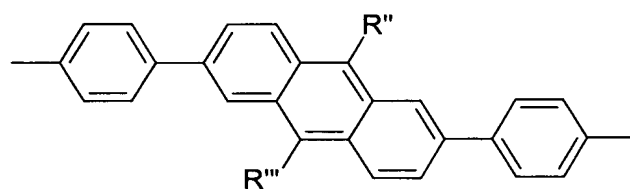
Ic

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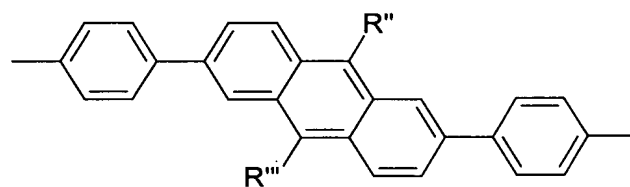
Id

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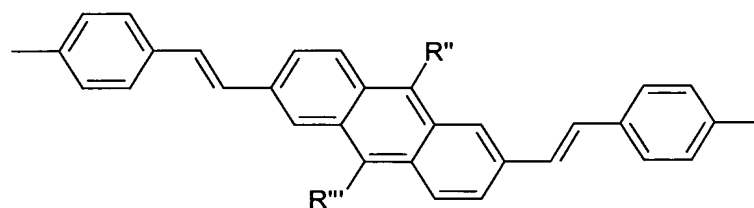
Ie

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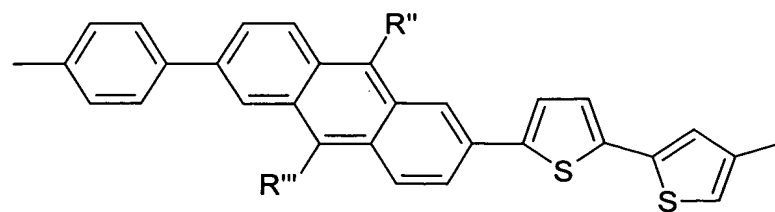
If

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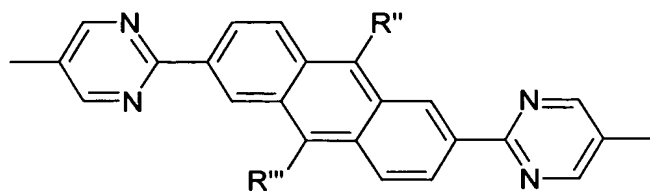
Ig

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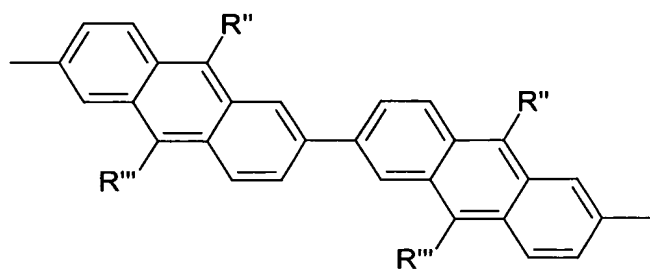


Ih

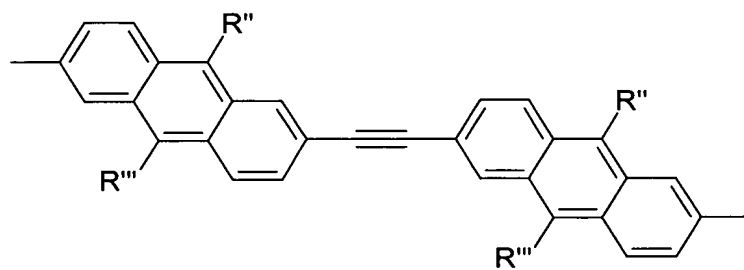
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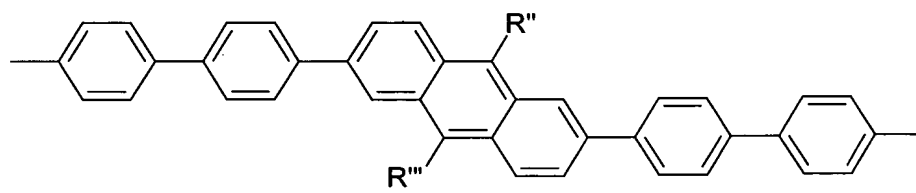
Ii



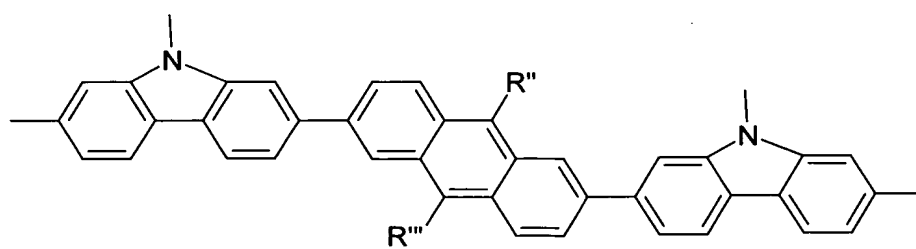
Ik



Im



In



Io

wherein

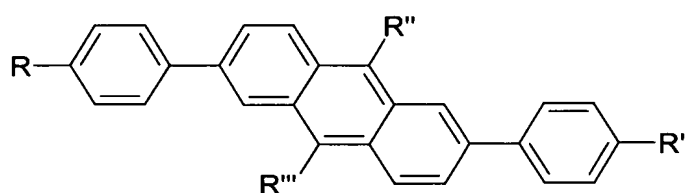
R and R' have independently of each other one of the meanings of R<sup>1</sup> in formula I1,

R'' and R''' have independently of each other one of the meanings of R<sup>5</sup> in formula I,

and the aromatic rings are optionally substituted with 1, 2 or 3 groups R<sup>3</sup> as defined in formula I.

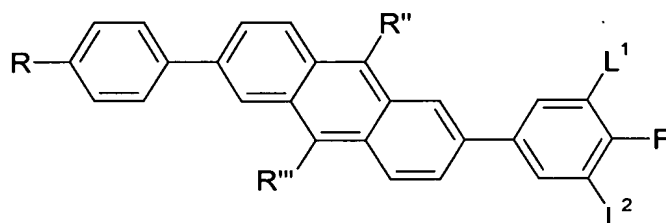
13. Compounds according to at least one of claims 1 to 12, selected from the following formulae

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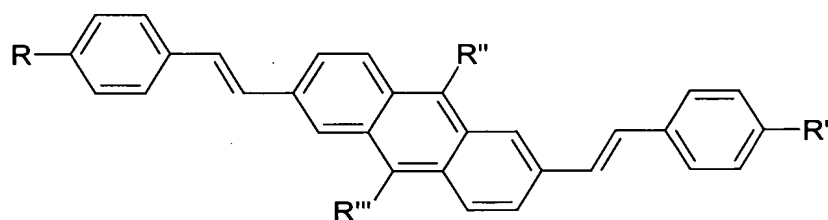
I2a

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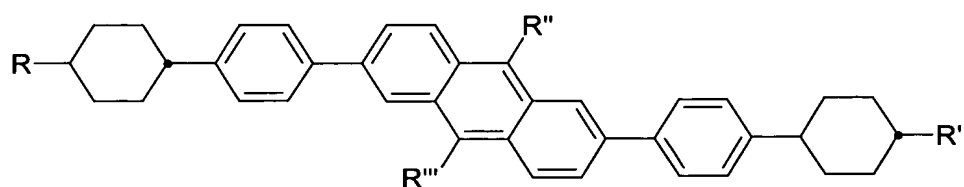
I2b

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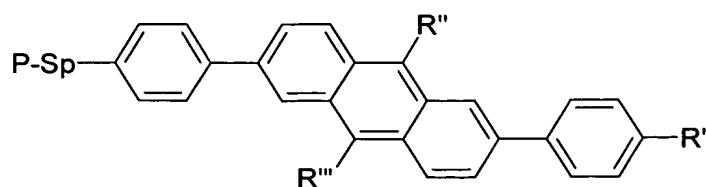
I2c

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I2d

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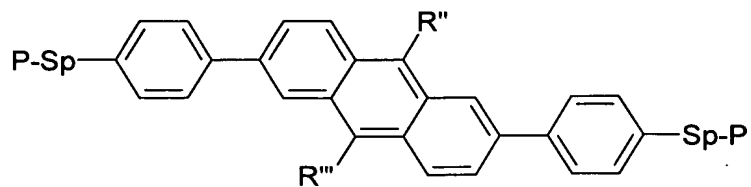


I2e

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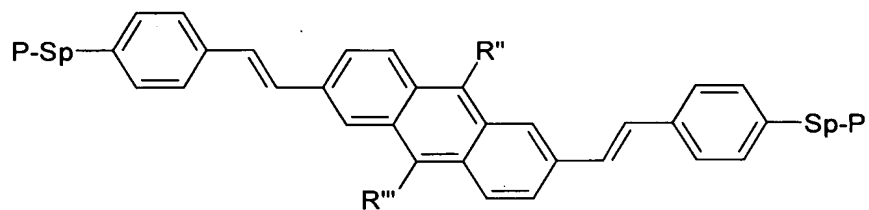


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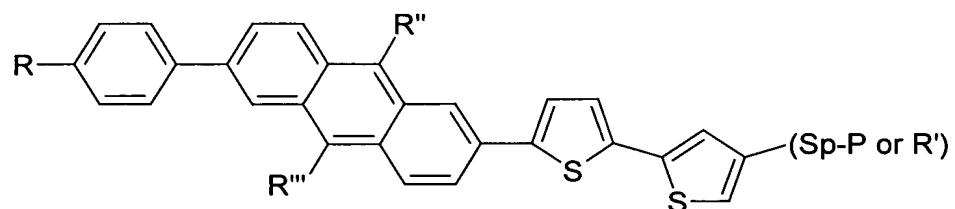
12f

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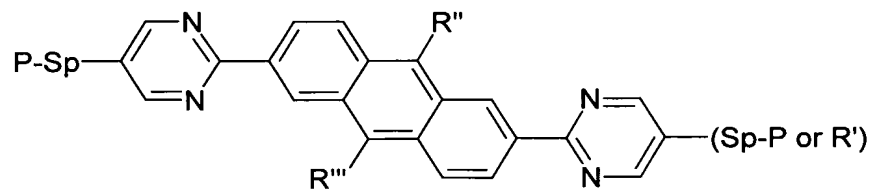
12g

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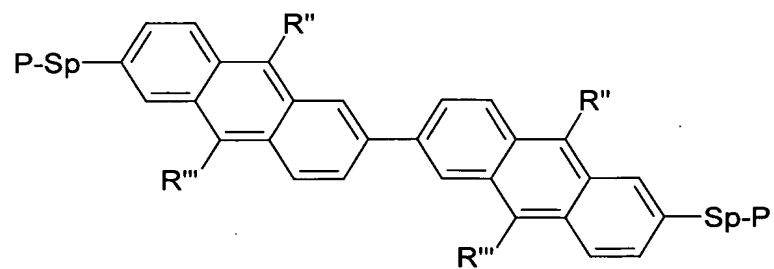
12h

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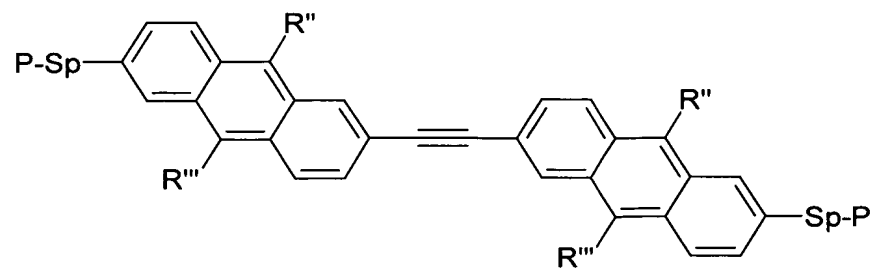
12i

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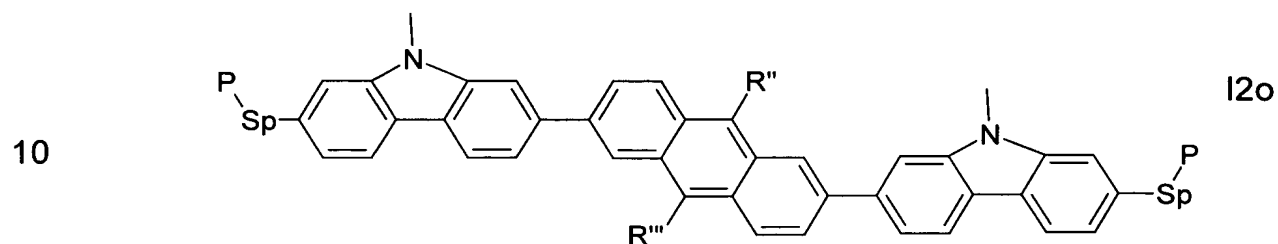
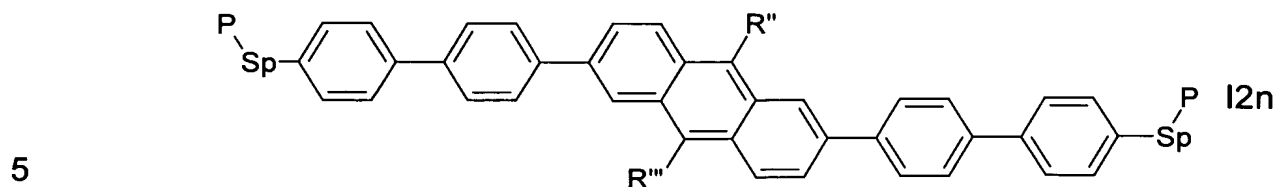
12k

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12m

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15 wherein P and Sp have the meanings given in formula I, R, R', R'' and R''' have the meanings given in claim 12, and L<sup>1</sup> and L<sup>2</sup> are independently of each other H or F, and the aromatic rings are optionally substituted with 1, 2 or 3 groups R<sup>3</sup> as defined in formula I.

- 20 14. LC medium comprising at least one compound according to at least one of claims 1 to 13.
- 25 15. Polymerisable LC material comprising at least one compound according to at least one of claims 1 to 12 and optionally at least one further compound, wherein at least one of said compounds is polymerisable.
- 30 16. Polymer obtained by polymerising a compound according to at least one of claims 1 to 13 or a polymerisable LC material according to claim 15.
- 35 17. Anisotropic polymer obtained by polymerising a compound according to at least one of claims 1 to 13 or a polymerisable LC material according to claim 15 in its oriented state in form of a film.

18. Semiconductor or charge transport material comprising at least one compound, polymerisable LC material or polymer according to at least one of claims 1 to 17.
- 5 19. Light-emissive material comprising at least one compound, polymerisable LC material or polymer according to at least one of claims 1 to 17.
- 10 20. Use of a compound, polymerisable LC material, polymer, semiconductor or light-emitting material according to at least one of claims 1 to 19 in electrooptical displays, LCDs, eLCDs, optical films, polarisers, compensators, beam splitters, reflective films, alignment layers, colour filters, holographic elements, hot stamping foils, coloured images, decorative or security markings e.g. for consumer objects or documents of value, LC pigments, adhesives, synthetic resins with anisotropic mechanical properties, cosmetics, pharmaceuticals, diagnostics, nonlinear optics, optical information storage, as chiral dopants, in electronic devices like for example OFETs as components of integrated circuits (IC), as thin film transistors (TFT) in flat panel display applications or for Radio Frequency Identification (RFID) tags, in semiconducting or light-emitting components of organic light emitting diode (OLED) applications, electroluminescent displays or backlights of LCDs, for photovoltaic or sensor devices, as electrode materials in batteries, as photoconductors, or for electrophotographic applications or electrophotographic recording or as alignment layer in LCD or OLED devices.
- 25
- 30 21. Optical, electrooptical or electronic device, LCD, eLCD, OLED, OFET, IC, TFT or alignment layer characterized in that it comprises a compound, polymerisable LC material, polymer, semiconductor or light-emitting material according to at least one of claims 1 to 19.
- 35 22. TFT or TFT array for flat panel displays, RFID tag, electroluminescent display or backlight comprising a compound,

polymerisable LC material, polymer, semiconductor or light-emitting material or device according to at least one of claims 1 to 19 or 21.

- 5        23. Security marking or device comprising a compound, polymerisable LC material, polymer, semiconductor or light-emitting material or device according to at least one of claims 1 to 19, 21 or 22.

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